

Provide a clear and organized presentation. Show all of your work, completely simplify your answers, and give exact values only. Consider the region outside the polar graph of $r = 3 \sin 2\theta$ but inside the polar graph of $r = 2$. Clearly sketch the graph of these two polar graphs in the same coordinate system and determine both the area of the bounded region and the arc length of the portion of the polar graph of $r = 3 \sin 2\theta$ that lies outside the polar graph of $r = 2$.